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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,171	10/02/2000	Xuequan Zhang	CHOI-0038	4189

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EXAMINER

PASTERCZYK, JAMES W

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 03/18/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/678,171

Applicant(s)
Zhang et al.

Examiner
J. Pasterczyk

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1755



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 19, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above, claim(s) 17-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claims 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Oct 20, 2001 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 6) ☐ Other:

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-16, drawn to a catalyst and method of making it, classified in class 502, subclass 159.
- II. Claims 17-19, drawn to olefin polymerization processes, classified in class 526, subclass various depending on the olefin polymerized.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product, such as a simple homogeneous catalyst.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Joseph Rossi, Esq., on 7/29/02, a provisional election was made with traverse to prosecute the invention of group I, claims 1-16. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. Applicants have cited prior art on p. 3 of the present specification that has not been provided. Under 37 CFR 1.56 applicants have a duty to disclose in an IDS any prior art which may have a material bearing on the patentability of the present application known to them. The art cited on p. 3 is clearly known to them. ✓

7. The abstract of the disclosure is objected to because it repeats that an alumoxane or alkyl aluminum compound may be in the catalyst, it refers to the purported merits of the invention, and it uses the term "insulation layer" which makes it unclear against what the support and catalyst layers are being insulated against, e.g. heat, light, electricity, etc. Correction is required. See MPEP § 608.01(b). ✓

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: all features numbers found in figure 1 are not found in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. X

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9. Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1-16 describe the intermediate layer as an "insulation" layer. This term begs the question of against what the two other layers are being insulated against, e.g. electricity, heat, light, etc. Instead, this layer seems to be a chemical barrier layer preventing chemical bonding or other direct interaction between the support and the catalyst compound. ✓

10. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, l. 1, "for producing a syndiotactic styrenic polymer" may be viewed as either intended use or as functional recitation without sufficient structure to perform the recited process; the latter seems more appropriate since there is no recitation of the particular catalyst used. The term "high" in claim 1 is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. This term modifies "surface area" in l. 3, leaving the meaning of the entire term unclear. In (C), "homogeneous" does not appear to apply since this is a supported catalyst and hence neither is the catalyst compound dissolved in either (A) or (B), nor is the supported catalyst likely to be soluble in the typical solvents used in polymerization, instead forming a slurry; also,

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reciting “as essential (sic) component” is redundant since (C) is already positively recited as being present. In the penultimate line it is not clear if “functions as (sic) insulation layer” means as thermal insulation, light insulation, electrical insulation, or some other meaning; it appears to actually act as a barrier layer to chemical reaction between the support and the transition metal compound.

In claim 2, “harmless to catalyzation (sic) performances (sic)” is awkward and should be reworded; it is not clear what is meant by “interactive” with the catalyst and support, “the styrenic monomer” lacks antecedent basis, and it is not clear what is meant by “after the catalyst is loaded”; does this mean after the entire supported catalyst is loaded into the reactor, or after the homogeneous (sic) transition metal compound is coated onto the polymer which coats the support?

In claim 4, last line, make “polyamide polymer” plural.

In claim 5, l. 3, correct the spelling of “coploymer”.

In claim 7 it is not clear versus what the weight percentage is measured.

In claim 8, l. 2, make “bead” plural.

In claim 9, make “zeolite” plural.

Claims 10-12, l. 1-2 contain the phrase “homogeneous transition metal compound” which as noted above appears to be an incorrect characterization of the transition metal compound.

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In claim 11, l. 2, "catalyst" should be --compound--. In l. 10, R^{4-6} cannot be alkyl, aryl, or any other monovalent groups since they must by definition in the formula be divalent, i.e. alkylene, arylene, etc. In l. 14 "X" should be --X¹--.

In claim 12, l. 2, "multiple-nuclear catalyst" should be --multinuclear compound--; in the recitation of R^7 , R^7 cannot be merely alkyl or any other monovalent hydrocarbyl group unless n is only 1, which would conflict with the compound being multinuclear. In the penultimate line change "X" to --X¹--.

In claim 13 it is not clear versus what the weight percentage is measured.

In claims 14 and 16, insert --an-- before "alkyl aluminosiloxane" and "alkyl aluminum compound" since these are both generic families of compounds.

In claim 15, l. 1-2, "for producing a syndiotactic styrenic polymer" may be viewed as either intended use or as functional recitation without sufficient structure to perform the recited process; the latter seems more appropriate since there is no recitation of the particular catalyst used. In l. 3 "the slurry" lacks antecedent basis. The term "high" in claim 15 is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. This term modifies "surface area" in l. 4, leaving the meaning of the entire term unclear. In l. 5, "homogeneous" does not appear to apply since this is a supported catalyst and hence neither is the catalyst compound

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dissolved in either (A) or (B), nor is the supported catalyst likely to be soluble in the typical solvents used in polymerization, instead forming a slurry.

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

12. Claims 1-4, 7, 9 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ono et al., USP 4,483,940 (hereafter referred to as Ono).

Ono discloses the invention as claimed when the recitation "for providing a syndiotactic styrenic polymer" is read as intended use (abstract; col. 1, l. 14-23; col. 3, l. 37 to col. 4, l. 21; col. 5, l. 45-52).

13. Claims 1, 2, 7, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hershman et al., USP 4,579,689 (hereafter referred to as Hershman).

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Hershman discloses the invention as claimed (abstract; col. 1, l. 65 to col. 2, l. 2).

14. Claims 1-3, 7, 9 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Harth et al., USP 6,211,113 (hereafter referred to as Harth).

Harth disclosed the invention as claimed (abstract; col. 1, l. 58 to col. 2, l. 5; col. 2, l. 52 to col. 3, l. 4).

15. Claims 1, 2, 7 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Tonkovich et al., USP 6,440,895 (hereafter referred to as Tonkovich).

Tonkovich discloses the invention as claimed (abstract; col. 2, l. 35-38; col. 3, l. 44).

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 1-10, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hershman as cited above in view of Herrmann et al., Pre-Grant publication US 2002/0013217 A1 (hereafter referred to as Herrmann).

The disclosure of Hershman has been discussed above.

Hershman lacks disclosure of the support being preferred embodiments of the present claims as well as the catalyst being preferred embodiments of the present claims.

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However, Herrmann teaches that supports and catalyst compounds as well as cocatalysts preferred by present applicants are conventional in the art (paragraphs 0010-0017, 0020-0043, 0143, 0148).

It would have been obvious to one of ordinary skill in the art to apply the teaching of Herrmann to the disclosure of Hershman with a reasonable expectation of obtaining a highly-useful olefin polymerization catalyst with the expected benefit of less catalyst poisoning of the catalyst metal compound by the support by use of the chemical barrier layer between the two.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Pasterczyk whose telephone number is (703) 308-3497. The examiner can normally be reached on M-F from 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached on (703) 308-3823. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 for normal faxes, 872-9311 for after final faxes.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



J. Pasterczyk

3/13/03



Mark L. Bell
Supervisory Patent Examiner
Technology Center 1700